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Trivedi, R. (2016). Does university play a significant role in shaping entrepreneurial intention? A Cross-country Comparative analysis. *Journal of Small Business and Enterprise Development*. 23(3), 790-811.

## **Does University Play a Significant Role in Shaping the Entrepreneurial**

### **Intention? :**

#### **A Cross-Country Comparative Analysis**

#### **Abstract**

##### **Purpose**

To foster entrepreneurship among students and incubate more start-ups for economic prosperity, universities around the globe are required to play a key role in terms of developing an overall conducive eco-system for student fraternity. Some previous studies have analyzed student entrepreneurship and the effect of entrepreneurship courses. However, the role of university as provider and enabler of entrepreneurial environment and its impact on entrepreneurial intent among student has not studied in a cross-cultural context. Considering this, the present study seeks to examine the critical role played by university in fostering entrepreneurial intention among post-graduate students.

##### **Design/Methodology/Approach**

For the said purpose, researcher has taken the broader framework suggested by Kraaijenbrink et al. (2010) to understand university environment and Theory of Planned Behavior (Ajzen, 1975) to measure entrepreneurial intention and its antecedents among the sample of final year post-graduate management students of India, Malaysia and Singapore. The total sample size is 1097. The data has been analysed with the help of Exploratory Factor analysis, MANOVA and Structural Equation Modeling.

##### **Findings**

Two factors that emerged out of analysis in relation to university environment and support were: a) Targeted cognitive and non-cognitive support and b) General educational support. With the help of Structural Equation Modelling (SEM), an attempt was made to find the relationship between these two factors and entrepreneurial intention. It was found that university environment and support has significantly positive relationship with perceived behavioural control. With the help of MANOVA, it was found that there is statistically significant difference between perceived university environment and support factors among the students of India, Singapore and Malaysia. With this, it was also found that for both the factors, the highest mean score was found among the students of Malaysia, followed by the students of Singapore and India.

### **Originality/value**

The study has closely examined role played by University environment and support to foster entrepreneurship among young students. The findings of the study can be used by post-graduate educational institute to design pedagogy, create enabling entrepreneurship support system and work towards becoming an entrepreneurial university.

### **Keywords:**

University environment and support, General educational support, Targeted cognitive support, Entrepreneurial intention.

# **Does University Play a Significant Role in Shaping the Entrepreneurial**

## **Intention? : A Cross-Country Comparative Analysis**

### **Introduction**

Looking at the roller-coaster ride the various economies took in the recent past, several stakeholders, including public policy makers and educational institutions, have reinforced the need to develop sound entrepreneurial culture to stabilize economies and create opportunities for growth. Parallely, rather than seeking wage employment in highly dynamic and competitive corporate entities, an increasing number of students now prefer to start their own venture based on a unique idea with minimum seed capital. Various researchers have found that the new ventures established by university alumnae have a significant economic multiplier effect in terms of job creation and income generation (Dietrich, 1999; Richert and Schiller, 1994; Carree and Thurik, 2006). Looking at need of society on one hand and the growing aspirations of students as potential entrepreneurs on the other, universities world-over have started offering entrepreneurship courses (Postigo, 2002) and they actively provide mentoring, support and assistance to promising students.

Indeed, the universities are expected to play a pivotal role in the ecosystem that fosters entrepreneurship and encourages students to take it up as a viable career alternative. Although few researchers have analysed the role played by entrepreneurship education in shaping entrepreneurial intention of students (Peterman and Kennedy, 2003; Souitaris et al. 2007), role of

universities have not been studied as providers and enablers of environment conducive to nurture entrepreneurial intention leading to new venture creation. It has been argued in the past that entrepreneurship education in general and university education system in particular has significant role to play in shaping entrepreneurial intention among students (Garavan and O'Cinneide, 1994; Turker and Selcuk, 2009). Kraaijenbrink et al. (2010) suggested that as university can support student in multi-faceted way, it is necessary to understand the effect of such measures and the extent to which they could influence student in adopting entrepreneurship as career option. Considering this shortfall in the literature, present study primarily seeks to examine the critical role played by universities in fostering entrepreneurial intention among students.

Studying entrepreneurial intention is considered crucial. Although literature on entrepreneurship has increasingly focused on the intention-based models, not much emphasis has been laid on the contextual and situational factors, such as the role played by universities and other academic institutions in the formation of the intention. As suggested by Verheul et al. (2009) and Verheul et al. (2012), it is imperative to understand formation of entrepreneurial intention from the perspective of an integrated framework. A number of models have been proposed to explain the relationship between an individual's personal characteristics and subsequent intentions. An extensive review of literature for entrepreneurial intention (Shapero, 1982; Bird 1988; Schere et al. 1991; Krueger 1993; Boyd and Vozikis 1994; Krueger and Brazeal 1994; Krueger et al. 2000; Busenitz and Lau, 1996; Crant 1996; Kolvereid 1996; Reitan 1996; Chen, et al. 1998; Tkachev and Kolvereid 1999; Mitchell et al. 2000; Erikson, 2002, Drnovsek and Glas, 2003) identified several viable frameworks worthy of further investigation. However, looking at wide scale use

and applicability in different environmental context and based upon detailed literature review-based recommendation of Verheul et al. (2009), the present study has used Theory of Planned Behaviour (TPB) proposed by Ajzen (1987) as the basic framework to understand entrepreneurial intention of the students and then extended the same by adding university environment and support as antecedent to understand its influence on the intention-based framework. In the past, various scholars have used and demonstrated effectiveness of TPB in predicting entrepreneurial intention (for e.g. Krueger et al. 2000; Yang, 2013). In one of the recent study conducted by Moriano et al. (2012), TPB was found to a robust framework to predict entrepreneurial intention among university students of six different countries.

Secondly, to test the model and to determine its external validity and generalizability of findings, samples were taken from the final year post-graduate management students from three South and Southeast Asian countries namely India, Malaysia and Singapore. The reason for selecting these three countries in South and Southeast Asia has been the diversity found in them on a large number of parameters such as the land area, population, culture, economic pattern and -- most important of all — in the level of entrepreneurial activity preparedness as measured by The Global Entrepreneurship Index (Acs and Szerb, 2009). The findings of this paper is also expected to provide better insight into entrepreneurial activity and role played by university in shaping entrepreneurial intention among students in these three countries at the point when they are expected to make their major career decision.

The remainder of the paper is structured as follows. In the second part, literature on factors influencing entrepreneurial intention in line with TPB along with university environment and

support is outlined. The next section provides research methodology and data analysis. Finally, findings of the study and their practical implications have been provided along with direction for future research.

## **Review of Literature**

### *Entrepreneurial Intention and the Theory of Planned Behaviour*

The theory of planned behaviour was put forth by Fishbein and Ajzen (1975), Ajzen and Fishbein (1980) and Ajzen (1985) through the intention-formation model. The model was originally developed for predicting intentions that go into taking reasoned actions in ordinary life, such as using birth-control pills. Ajzen (1988) extended the model of reasoned action by adding perceived behaviour control to the model. This extended model was subsequently referred to as *the theory of planned behaviour* (TPB). In the past, TPB has been successfully used not only to predict entrepreneurial intention but also to understand entrepreneurial activity (Kolvereid and Isaksen, 2006; Verheul et al. 2012). TPB integrates four cognitive factors into an intent-based model: intentions, perceived behaviour control, attitudes and subjective norms. In the context of this study, new ventures are hypothesized to be created via careful thought and action, and are not a result of unconscious motive or unplanned behaviour (Katz & Gartner, 1988; Bird, 1998; Bhawe, 1994). The main postulate of this theory is that the intention for any human behaviour is determined by three antecedents, *attitude toward behaviour*, *subjective norms* and *perceived behavioural control*. It has been observed that the use of TPB-based model results into explaining 30% to 45% of variance in entrepreneurial intention (Kolvereid, 1996; Autio et al. 2001). However, in the previous studies, the effect of these four factors on

entrepreneurial intention is contradictory or inconsistent (Armitage and Conner, 2001; Liñán and Chen, 2009).

*Attitude toward behaviour (ATB)* has been simply defined as the extent to which an individual has a positive or negative evaluation of the behaviour in question (Ajzen 1991). Ajzen (1991) further suggests that attitudes do not work directly on behaviour, but indirectly through intentions. He further contends that attitudes are influenced by many exogenous variables, which also act indirectly on behaviour through the intentions. Ajzen's notion of *attitudes* identifies the performance of some type of behaviour is associated with feelings of favourableness or unfavourableness. In the literature in recent past, ATB has emerged as significant and one of the most influential constructs in explaining the intention of potential entrepreneurs to start a venture (Harris and Gibson, 2008; Liñán and Chen, 2009; Watchravesringkan, 2013). The more positive a person's attitude toward an action, the more likely that he will develop the intention to engage in that action. Based upon this segment of the Ajzen model, the following hypotheses are derived. Thus, Hypothesis 1 states:

*H<sub>1</sub>: Entrepreneurial attitude is positively related to entrepreneurial intention*

*Subjective norms (SN)* is the perception of an individual of what other important people or close groups think of the behaviour under consideration (Fayolle, 2002). Subjective norms are viewed by Ajzen (1991) as perceptions that the significant referents desire from the individual to perform or not perform certain actions (behaviours). Referents such as spouses, close friends and parents may encourage or mitigate the entrepreneurial intentions and behaviours. If the subjective norms are positive about the nascent entrepreneur's desire to start a business, then social pressure toward doing so will be strong (Ajzen, 1991). On other hand, as indicated by



Shane (1992), subjective norms reflect the influence of social value and attitudes and it has been found to be one of the barriers for innovation (Sanchez-Escobedo et al. 2011). In the past, it was found that perceived subjective norms is not the strong influencer of entrepreneurial intention (Kolvereid and Isaksen, 2006; Conner and Armitage, 1998; Krueger et al. 2000), however the results are far from being consistent, as few of the past researchers have demonstrated that though it is not the most important predictor, still it significantly influences entrepreneurial intention (Luthje and Franke, 2003; Kautonen et al., 2013). Ajzen's proposition yields a second testable hypothesis:

*H<sub>2</sub>: Subjective Norms are positively related to entrepreneurial intentions.*

*Perceived behavioural control (PBC)* is the perceptual understanding of a person about the ease or difficulty of behaving in a particular way (Ajzen, 1991). This factor relates to the perception -- whether the behaviour is feasible -- which is a predictor of behaviour. Among three pioneering factors of TPB, perceived behavioural control plays a significant role in the theory of Ajzen (1991). Indeed, Ajzen's concept about perceived behavioral control reflects perceptions of internal and external constraints on behaviour. PBC reflects beliefs regarding access to the resources and opportunities needed to perform behaviour, and alternatively, to the internal and external factors that may impede performance of the behaviour. This notion encompasses two components: (a) the facilitating conditions reflected by the availability of resources needed to perform the behaviour and (b) self-efficacy represented by an individual's self-confidence in his or her ability to perform the behaviour (Bandura 1977). Thus, when considering to engage in a start-up business behaviour, individuals judge the viability of the opportunity, the availability of resources, and one's ability to perform the required tasks (Ajzen, 1991). These judgments create

a positive or negative perceptions regarding taking a potential action (i.e. PBC). In the entrepreneurship application, PBC represents the likelihood in the nascent entrepreneur's mind, of starting and operating the business successfully. In other words, the greater the perception of PBC, the greater will be the intentions of performing the behaviour (Krueger et al. 2000). Stated in negative, if an individual genuinely feels they are unable to successfully secure resources and perform the required behaviour, they will not form the intention to start a business. In past, researchers have found that perceived behavioural control is the most important factor in shaping entrepreneurial intention (for e.g. Arenius and Kovalainen, 2006; Souitaris et al. 2007; Van Gelderen et al. 2008). Thus, in Hypothesis 3, another test of the Ajzen model is represented:

*H<sub>3</sub>: Entrepreneurial perceived behavioural control is positively correlated to entrepreneurial intention.*

In a meta-analysis of the TPB, Armitage and Conner (2001) found subjective norms to exert the weakest influence on intention among the three antecedents. However, Scherer et al. (1989) and Matthews and Moser (1995) have found that subjective norms would influence attitude and perceived behavioural control and thus indirectly influence intention. From a social-capital point of view, a number of authors argue that values transmitted by "important others" would cause more favorable perceptions regarding personal attraction (attitude) and self-efficacy (PBC) (Cooper, 1993; Scherer et al., 1991; Matthews and Moser, 1996). This finding leads to two additional testable hypotheses:

*H<sub>4</sub>: Subjective norms are positively related to entrepreneurial attitude.*

*H<sub>5</sub>: Subjective norms are positively related to perceived behavioural control.*

*University environment and support:* In relation to the role of university in stimulating entrepreneurship, it has been found that universities as a stakeholder can be one of the most influential factors in encouraging new entrepreneurs. Although a few previous studies have tried to establish a link between entrepreneurship education and entrepreneurial attitude, intention or action, albeit without empirical proof (for e.g. Dyer, 1994; Robinson et al. 1991; Peterman and Kennedy, 2003), they have not taken into consideration the influence of the university ecosystem on entrepreneurial intention of graduates. Therefore, researcher has taken university environment and support as one of the potential environmental factors affecting students' entrepreneurial intention. Most previous studies attempt to explain students' entrepreneurial intent as a result of the education they have followed. For example, Hatten & Ruhland (1995) have analysed the effect of an entrepreneurship course on students' attitude towards entrepreneurship. Their conclusion is that attitude towards entrepreneurship can be measured and changed. Other examples of studies with a similar focus are Robinson et al. (1991), Wang & Wong (2004), and Ede et al. (1998). Lüthje and Franke (2003), in this regard, have underlined the importance of contextual factors in the university environment, which play a role in either inhibiting or facilitating the occurrence and the intensity of entrepreneurial behaviours for technology students. Johannisson (1991) and Autio et al. (1997) also underscore the impact of students' perceptions of entrepreneurship, along with resources and other support mechanisms available in the university environment, on positively influencing student attitudes toward entrepreneurial careers. Other researchers have also found that university support mechanisms influence entrepreneurial activities (Morris & Lewis, 1995; Fini et al., 2009).

Lüthje and Franke (2003) have tried to understand the role played by the university and found that the university environment can either greatly motivate student entrepreneurship or create

obstacles for them. In another empirical study, Franke and Lüthje (2004) tried to measure the impact of the university environment directly on students' entrepreneurial intent and found that if the university does not provide either the required start-up knowledge or the key resources and support services to launch a venture, students' entrepreneurial intent will be diminished. Moreover, they concluded that the university environment has a greater influence on entrepreneurial intent than personality traits or socio-economic factors. Other researchers have also found that university support mechanisms influence entrepreneurial activities (Morris & Lewis, 1995; Fini et al., 2009). A survey of technology students from four different countries also reveals that the career preferences and entrepreneurial convictions are influenced by the image of entrepreneurship as a career alternative and the support received from the university environment (Autio et al. 1997). Other studies which explore the effects of the university environment on entrepreneurship activities focus more on faculty and university staff than on students (BenDaniel 1999).

**--Insert Figure I here --**

In the same vein, a survey from Autio et al. (1997) revealed that the selection of entrepreneurship as a career is influenced by various factors such as the image of entrepreneurship and the university environment. However, considering the lack of empirical research linking university environment and support to students' entrepreneurial intention, we have adopted the framework suggested by Kraaijenbrink, Bos and Groen (2010). In their research, they have shown that university can provide three types of support for the entrepreneurial attitude: educational support, targeted cognitive support and targeted non-cognitive support.

Providing *educational support* is one of the major functions of universities and other teaching institutions. They are expected to build general awareness and impart skills necessary to be an entrepreneur (Kraaijenbrink et al. 2010). As per Wang and Wong (2004), the educational support directly influences the entrepreneurial ambition of the students and students are quite often not able to start their venture due to inadequate preparation, "... their business knowledge is insufficient, and more importantly, they are not prepared to take risk to realize their dreams." To overcome the same, it has been argued that educational support in form of entrepreneurship course, seminar, visiting lecture by prominent entrepreneurs, simulation games etc. are prominent methods adopted by institutes to support and shape entrepreneurial ambition among students (Peterman and Kennedy, 2003).

Turker and Selcuk (2008) found a positive significant relationship between perceived educational support and entrepreneurial intention. Sanchez (2010) also found a positive relationship between entrepreneurial training and entrepreneurial intention. In one another study, Kolvereid and Moen (1997) found a link between education in entrepreneurship and resultant entrepreneurial behaviour. Recently, Zhang et al. (2014) found a positive association between entrepreneurship education and entrepreneurial intention among Chinese students. Along with general educational support, universities can also provide more targeted and specific support. With this type of support we move from the traditional teaching role of universities to their business-promotion role. Here they could provide both cognitive support and non-cognitive support. *Targeted cognitive support* concerns the provision of specific cognitive support such as building awareness or motivation in students to start a small venture or develop new and innovative business models. It has been proven in the past that such a targeted cognitive support

greatly enhances the motivation level among students and build their confidence to start their own venture (Gorman and Hanlon, 1997). *Targeted non-cognitive support* refers to provision of seed-funding or incubation facilities that are typically given in the later stages of the entrepreneurial process. Along with the traditional role of the university in terms of knowledge generation, with changes in business and socio-economic landscape, it has been now expected that the university should also play a key role in transferring knowledge to business world for commercialization and good of society (Mian et al. 2012). On the similar line, Audretsch (2012) argued that along with transfer of knowledge in terms of patents, spin-offs or start-ups, university should also contribute towards providing leadership thinking for creating entrepreneurial capital among society. This would expand the scope of university from a traditional knowledge-generating to more of entrepreneurial eco-system enabler. This has resulted into a new concept of entrepreneurial university (Urbano and Guerrero, 2013) that shapes entrepreneurial intention among students by bringing positive attitude and influencing their self-perception about innate ability to start and successfully manage a venture. Based on these arguments, we propose two more hypotheses:

*H<sub>6</sub>: University environment and support are positively related to attitude towards behaviour.*

*H<sub>7</sub>: University environment and support are positively related to perceived behavioural control.*

## **Research Methodology**

The data reported in this paper were collected as part of a large study designed to test the relationship between personal variables, contextual variables and situational forces that shapes entrepreneurial intention. The convenience sampling method was employed, and a survey was conducted among post-graduate management students in India, Malaysia and Singapore. The

sample size was based on the requirements for analysing the predictive model using hierarchical multiple regression, which was the statistical tool used for data analysis. There exist accepted rules of thumb to determine generalizable sample sizes when using multiple regression in a confirmatory fashion. For example, Hair et al. (1999) recommend a minimum five observations per independent variable -- and the desired number is fifteen to twenty observations -- so that the sample would be representative of the studied population. Thus according to this rule, an acceptable sample size for this study is one hundred respondents. This calculation includes four independent variables namely entrepreneurial attitude, subjective norms, perceived behavioural control and university environment and support. Entrepreneurial intention is a dependent variable. ( $20 \times 4 = 80 + 20 = 100$ ). Since a higher level of power for the study may be gained by increasing the number of respondents, it was decided to have a larger sample size than the minimum level for each country. Table I shows the number of samples from the three countries:

**--Insert Table I here --**

A structured non-disguised questionnaire was designed to gather data. Prior to administering the survey, a pilot study was conducted. For the pilot study, a preliminary version of the structured questionnaire was personally administered to a random sample of twenty-five students in India and fifteen students in Malaysia (via internet).

## **Measurement**

To measure the first three independent variables of TPB, namely entrepreneurial attitude, subjective norms and perceived behavioural control, researcher has used the measure proposed by Liñán and Chen (2006) in their Entrepreneurial Intention Questionnaire (EIQ) (see Table II for details on measurement of variables and reliability. This is a reliable and internationally

applicable scale to measure the TPB variables, for e.g. in one of their studies which measure the entrepreneurial intention using EIQ among Spanish and Taiwanese students, the composite reliability of 0.928, 0.892 and 0.919 for attitude towards entrepreneurship, subjective norms and perceived behavioural control were reported. In another study by Zampetakis et al. (2015), the same was reported to be highly reliable in context to Greek university students. The data had for all the four variables has been collected on a five-point Likert scale from “Strongly Agree” to “Strongly Disagree”.

After an extensive review of literature for university environment and support, it was found that there was only one scale available to measure this variable which is developed by Kraaijenbrink, Bos and Groen (2010). A scale, with thirteen questions was used by them to measure perceived university support for 2,415 respondents from five European universities. They found composite reliability of 0.897, 0.862 and 0.852 for general educational support, targeted cognitive support and targeted non-cognitive support respectively. This independent variable was tested by them using a five-point Likert scale from “Strongly Agree” to “Strongly Disagree”, and the same has been used for this study. From the thirteen questions used in this scale, one question was deleted after pilot testing and six new questions have been added after extensive deliberation with subject experts. Thus, the revised scale has 18 questions measured on a five-point Likert scale.

### **Reliability of Measures**

In order to assess the reliability of the measures in this study, item-to-total correlations and Cronbach Alpha were employed. As suggested by Nunnally (1978), the criteria for retaining a scale item include an item-to-total correlation of at least 0.35 and Cronbach Alpha of at least



0.70; however, Cronbach Alpha was allowed to go down to 0.6 since this is an exploratory research (Hair et al., 1999). The SPSS produced separate internal consistency tests (i.e. reliability Cronbach Alpha test) for students from India, Singapore and Malaysia as well as for the whole data set. It was noted that the samples from the three countries were homogenous and suitable for assessing the reliability of the construct. Table II reports the results of Cronbach Alpha for the variables of TPB, i.e. entrepreneurial intention, entrepreneurial attitude, perceived subjective norms and perceived behavioural control. Cronbach Alpha for the entrepreneurial intention for India, Singapore and Malaysia samples was .911, .931, and .956 respectively. With the combined data set, the overall Cronbach Alpha was .929 indicating a satisfactory match with Nunnally's (1978) threshold.

In respect to attitude towards entrepreneurship, Cronbach Alpha for India, Singapore and Malaysia samples was .831, .868, and .920 respectively. With the combined data set, the overall Cronbach Alpha was .871 indicating a satisfactory match with Nunnally's (1978) threshold. With respect to subjective norms, Cronbach Alpha for India, Singapore and Malaysia samples was .739, .856, and .857 respectively. With the combined data set, the overall Cronbach Alpha was .814 indicating a satisfactory match with Nunnally's (1978) threshold. With respect to perceived behavioural control, Cronbach Alpha for India, Singapore and Malaysia samples was .741, .850, and .870 respectively. With the combined data set, the overall Cronbach Alpha was .809 indicating a satisfactory matching with Nunnally's (1978) threshold.

**--Insert Table II here --**

Table III reports the results for the variable of university environment and support for which Cronbach Alpha for India, Singapore and Malaysia samples was .945, .941, and .955

respectively. With the combined data set, the overall Cronbach Alpha was .950 indicating a satisfactory matching with Nunnally's (1978) threshold.

**--Insert Table II here --**

## **Data Analysis**

To understand entrepreneurial intention and its relationship with university environment and support among sample students from India, Singapore and Malaysia, the data have been analysed keeping in view the hypotheses and major objectives set out for the study. First, a factor analysis is performed for university environment and support. Thereafter, Structural Equation Modeling (SEM) is used to test the proposed model that postulates a relationship between entrepreneurial intention, attitude towards entrepreneurship, subjective norms, perceived behavioural control and university environment and support. MANOVA has been used to test the hypothesis to understand differences in perceptions of the students from India, Singapore and Malaysia for university environment and support.

## **Factor Analysis for University Environment and Support**

To understand the underlying variables in the construct *university environment and support*, an exploratory factor analysis was conducted. All measurement items for the same were examined for the assumptions of the factor analysis, such as normality, sufficient correlations and impact of influential observations (Hair, 1999). The correlation items of university environment and support items were examined to determine the appropriateness of the Exploratory Factor Analysis (EFA). The Bartlett Test of sphericity was used to discover the presence of correlations

among the underlying variables. It's being significant at 0.000 for all the items indicated that the co-relationship matrix has significant correlations. The Kaiser-Meyer-Olin measure of sampling adequacy showed satisfactory adequacy (0.955). Totally there were eighteen items in the data. Two factors were extracted from these eighteen items using the method of Principal Component Analysis and Rotation Method of Varimax, with criteria of eigenvalues greater than 1. These two factors explained 62.989 percent of the variance.

**--Insert Table IV here --**

The two factors that emerged out of the analysis are, *targeted cognitive and non-cognitive support* and *general educational support*. The factors, their respective items with the numbers and their corresponding factor loading are given in Table IV. The two factors and their relative contribution to variance are presented in Table V. It can be seen that both the factors have an eigenvalue of above 1, i.e., 9.801 and 1.537 respectively. Factor 1, *targeted cognitive and non-cognitive support*, contributes the maximum variance of 54.449 per cent followed by Factor 2, *general educational support* which contributes 8.540 per cent.

**--Insert Table V here --**

### **Testing Entrepreneurial Intention-University Support Model with SEM**

It is considered that there are three considerations fundamental for the interpretation of the empirical analysis of the study of this nature: (1) the relevance of intentions in predicting and explaining behaviour, (2) the overall fit of the models relevant to the entrepreneurial activity, and (3) the relative strengths of significant entrepreneurial intention and activity antecedents. Considering this and the chief objectives of the study to derive a mathematical model to relate the criterion or independent variable (the students' entrepreneurial intention) to the predictors

*(attitude towards behaviour, subjective norms, perceived behavioural control and university environment and support)*, the hypothesized model was tested using the Structural Equation Modeling technique (SEM). The formulation of the model was developed using the AMOS 16.0 software package.

For the present study, the use of SEM is pertinent as it helps to estimate a series of separate but interdependent multiple regression equations simultaneously for modelling students' intention to new venture creation. In the proposed model, the influence of attitude towards behaviour, subjective norms and perceived behavioural control on the development of entrepreneurial intentions is consistent with Ajzen's (1985) theory of planned behavior. With this, while considering student entrepreneurship, a new variable university environment and support is included in the proposed model.

However, before testing the hypothesis, it is necessary to find the overall fit of the SEM. At present, there is little consensus concerning the best index of an overall fit for the SEM (Hair et al., 1999). Most of investigators who have evaluated and compared extant indexes encourage reporting multiple indexes of overall fit (Bollen, 1989; Emeric, 1999; Tanaka, 1993). In this study, the evaluation of model fit was based on multiple criteria, including (1) the adequacy of parameter estimates; (2) chi-square statistics; (3) the Normed Fit Index (NFI); (4) the Comparative Fit Index (CFI); (5) the Tucker-Lewis Index (TLI); (6) the Root-Mean-Square Error of Approximation (RMSEA); and (7) 90% confidence interval around the RMSEA. Table VI presents a summary of the model fit indexes while Figure II shows the standardized path

estimates of the hypothesized model for the combined sample responses from India, Singapore and Malaysia.

**--Insert Figure II here --**

As indicated in Table VI, the evaluation criteria provide a strong confidence that the model is suitable for interpretation and provides a good overall fit. The model achieved convergence with the number of iterations of ten for overall sample. Chi-square of 2524.554 with 583 degree of freedom was obtained. All indexes fall within the acceptable range -- or close to it -- of overall fits as suggested by Hair et al. (1999). It is important to remark, however, that there are no strict norms for these indexes below which a model cannot be regarded as a reasonable description of the analyzed data and vice versa (Raykov & Marcoulides, 2000; Byrne, 2009).

**--Insert Table VI here --**

Table VII reports the regression weights produced by the SEM path analysis. The relationships hypothesized by H<sub>1</sub>, H<sub>3</sub>, H<sub>4</sub>, H<sub>5</sub>, and H<sub>7</sub> are significant at  $p < 0.001$  level. The relationships identified by H<sub>2</sub> and H<sub>6</sub> are not significant. The hypothesized model is found to have an explanatory power of 69 of the entrepreneurial intention.

**--Insert Table VII here --**

As we can see from Table VII, the attitude towards entrepreneurship emerges as the most important antecedent of the intention to become self-employed. The attitude has a strong and highly significant effect on entrepreneurial conviction (H<sub>1</sub>,  $\beta = 0.274^{**}$ ). It was found that perceived behavioural control in line with other studies has highest significant effect (H<sub>3</sub>,  $\beta = 0.417^{*}$ ) and found to be the important antecedent of the entrepreneurial intention. However, the

third variable proposed by Ajzen (1985), i.e. subjective norms, does not have any significant effect upon entrepreneurial intention of the students ( $H_2$ ,  $\beta = 0.256$ ).  $H_4$  and  $H_5$ , which relate subjective norms to attitude towards behaviour ( $\beta = 0.896^*$ ) and perceived behavioural control ( $\beta = 0.596^*$ ) respectively, were found to have statistically significant positive relationship. Thus, as proven by other research, it was found that subjective norm does have an indirect effect upon entrepreneurial intention, but it posits a significant relationship with attitude towards entrepreneurship and perceived behavioural control. Lastly, university environment and support was found to have statistically significant relationship only with perceived behavioural control ( $H_7$ ,  $\beta = 0.069^{**}$ ). For attitude towards behaviour it was found to have a non-significant relationship in nature ( $H_6$ ,  $\beta = -.0458$ ).

#### **Differences in University Environment and Support: Results of MANOVA and ANOVA**

To determine whether the students from India, Singapore and Malaysia differ significantly in their perceptions of university environment and support, a multivariate analysis of variance (MANOVA) was conducted. However, factor analysis conducted earlier has indicated that university environment and support is made-up of two factors, namely general educational support and targeted cognitive and non-cognitive support. Therefore, it was decided to conduct two separate MANOVA to understand the differences in perceptions related to these two factors.

In relation to the first factor, i.e. general educational support, Table VIII indicates that there is statistically significant difference between the perceptions of students of India, Singapore and Malaysia. (Wilk's  $\lambda = 0.760$ ;  $F = 25.939$ ; Sign. 0.000). Moreover, we can see from Table VIII, that the univariate  $F$ -ratios are significant for all the six statements (Statement 1:  $F = 138.740$ ,

Sign. = 0.000; Statement 2:  $F = 46.031$ , Sign. = 0.000; Statement 3:  $F = 38.351$ , Sign. = 0.000; Statement 4:  $F = 53.332$ , Sign. = 0.000; Statement 5:  $F = 25.378$ , Sign. = 0.000; Statement 6:  $F = 6.773$ , Sign. = 0.001). The highest mean score of the six statements given in Table VIII is of Malaysia, followed by India. This indicates that the students of Malaysia perceive the general educational support from their university to be more favourable than the students of India and Singapore. However, it was found that it is the students from India who perceived the general educational support to be more unfavourable compared to other two countries.

**--Insert Table VIII here --**

Table IX indicates that the univariate  $F$ -ratios were significant for all the twelve statements. Further, the mean score of the twelve statements (Statement 7 to 18) in Table IX indicates that for all the statements, highest mean score is of Malaysia, followed by Singapore and India. This indicates that the students of Malaysia perceive the targeted cognitive and non-cognitive support to be more favourable while the students of India find the same to be lowest as compare to students from other two countries. Overall, for university environment and support, it was found that there is statistically significant difference between the students of India, Singapore and Malaysia; the students of Malaysia found the same to be highest while those from India perceived the same to be lowest.

**--Insert Table IX here --**

### **Major Findings and Implications of the Study**

Considering the socio-economic benefit of entrepreneurial activity among young students, academic institutes, government and other public-policy advocates are interested in

understanding various factors that shapes entrepreneurial intention (Maes et al. 2014) so as to create conducive eco-system for new venture creation. For this, it is found very necessary to understand psychological, situational and contextual factors that influence entrepreneurial intention (Tolentino et al. 2014). In this article, based upon theoretical framework of the *Theory of Planned Behaviour* (Ajzen, 1985), an attempt was made to understand the influence of university environment and support on entrepreneurial intention of post-graduate management students of India, Singapore and Malaysia. The two factors that emerged from the factor analysis of university environment and support were *targeted cognitive and non-cognitive support* and *general educational support*. Targeted cognitive and non-cognitive support accounted for 55 per cent of the variance while general educational support accounted for almost 9 per cent of the remaining variance. At educational support level, universities are expected to identify and nurture entrepreneurial trait among students and shape their competence, thus sowing seed and nurturing students' ambition to start a successful venture (Debackere and Veugelers, 2005). Along with this, a well-crafted entrepreneurship education curriculum can significantly raise students' enthusiasm and competence to become a successful entrepreneur. At targeted cognitive and non-cognitive support level, as opined by Tijssen (2006), the emerging entrepreneurial universities are expected to play a key role by providing support mechanisms like patents, technology transfer, incubation among other necessary facilities to budding entrepreneurs. This will create a robust entrepreneurial eco-system and help the students in converting their idea into a viable business model that may further expand into a successful venture, with due support mechanism from university and other institutes. In this way, university can become a nodal point of entrepreneurial activity among young target audience in their specific region and augment economic growth, prosperity and job creation. Thus, broadly the results of this study is in line



with findings presented by Kraaijenbrink et al. (2010) that the university can be a strong support network and influencer in augmenting entrepreneurial activity among students.

Further, with the help of SEM, it was found that that adjusted R for the regression of attitude towards behaviour, subjective norms, perceived behavioural control, and university environment and support upon entrepreneurial intention was 0.69 ( $p < 0.00001$ ). This indicate that statistically the model is highly significant and more than 69 per cent of the variation in entrepreneurial intention can be explained by these four predictors. The findings of the study also suggest that attitude has a strong and highly significant effect on entrepreneurial intention ( $H1, \beta = 0.274^*$ ). Considering this, the present model affirms earlier research that the intention to become a business founder is moderated by the attitude about entrepreneurship. If public policy and university administration want to raise the number of graduates who decide to start their own business, an improvement of the students' attitude towards entrepreneurship apparently is an effective lever. By testing the individual hypothesis, the findings provided evidence that perceived behavioural control scores were positively related to intentions ( $H3, \beta = 0.417^*$ ), which are consistent with previous research (Boyd and Vozikis, 1994; Chen et al, 1998; De Noble, et. al. 1999).

Finally, the impact of university environment and support on attitude towards behaviour and perceived behavioural control was examined. The result indicates that university environment and support has a statistically significant relationship only with perceived behavioural control ( $H7, \beta = 0.069^{**}$ ). In this context, it simply means that a positive university environment and support would help the students to gain various tangible (finance, know-how etc.) and intangible (motivation, self-confidence, awareness of related regulation) resources and skill set that results

into increased entrepreneurial intention. A conducive university environment would make the student feel that if he intends to be an entrepreneur, required resources are available or he can generate it with the skill that he has gained throughout his educational career. Even few of the past studies have indicated that entrepreneurial convictions of the student are influenced by support received from the university environment (Autio et al. 1997). In one of the study, Schwarz et al. (2004) also confirm that a positive perception of the university actions to foster the aspiration to start a business leads to the stronger willingness to become an entrepreneur. It means that if the university provides a positive environment and support to budding entrepreneurs, the students would feel more empowered to start a business and ultimately has stronger intention to be an entrepreneur. These findings are in line with evidences of previous research, where it has been identified that entrepreneurship education results into development of favorable perceptions of competence and intention towards starting a new business (Krueger and Brazeal, 1994). In the past, it has been proven that in terms of educational support, those students who opted for entrepreneurship course has shown a greater inclination towards becoming entrepreneur (Sexton and Moore, 1995). Varela and Jimenez (2001) in a longitudinal study chose groups of students from five programmes in three universities in Columbia and found that the highest entrepreneurship rates were achieved in the universities that had invested the most in entrepreneurship guidance and education for their students.

Moreover, in terms of targeted cognitive and non-cognitive support, studies by Mian (1996) and Lerner (2005) have also provided evidences that technology transfer mechanism and university incubators results into increase in entrepreneurial activity among students. Thus, it is recommended that along with technology transfer and incubation system, university should also create a strong network of alumni entrepreneurs, technical experts, marketing experts, legal

counsels, prominent businessman etc. and connect them with students. This will provide a platform to students to experience, learn, innovate and experiment with their business ideas and execute it with due support in place. This will motivate and empower students to seek an entrepreneurial career (Henderson and Robertson, 2000). This is one of the most significant findings of this research. It simply means that not only a specific university system and government, but education system of various countries as a whole have an increased responsibility for fostering positive outlook towards entrepreneurship because they influence the perceived behaviour of the students and ultimately entrepreneurial intention. This leads us to recommend that the traditional role of university *to teach, observe and advice* be supplemented with the philosophy of *to understand, measure and assist* the aspiring student-entrepreneurs for the economic development of the nation.

With this, in context to both general educational support and targeted cognitive and non-cognitive support, it was found that the mean score of post-graduate management students of Malaysia was found to be highest while the students of India perceive the same to be lowest. This gives an immediate wake-up call to the higher educational system of India to probe the same further to develop relevant curricula and take other necessary action by creating required entrepreneurial support mechanism so as to have better supportive environment and system for the students who wish to start their career as business owner.

Lastly, two of the most prominent future avenues for exploration are to expand the findings of the study by a) fully examining the relationships among the specific educational and other support mechanism with entrepreneurial intention and entrepreneurial activity in samples involving students from developed economies and compare it with emerging economies and b) to examine the relation between university support and entrepreneurial intentions possibly with

samples other than business students, in line with recommendation of Shook et al. (2003) so as to have increased generalizability and external validity of the model.

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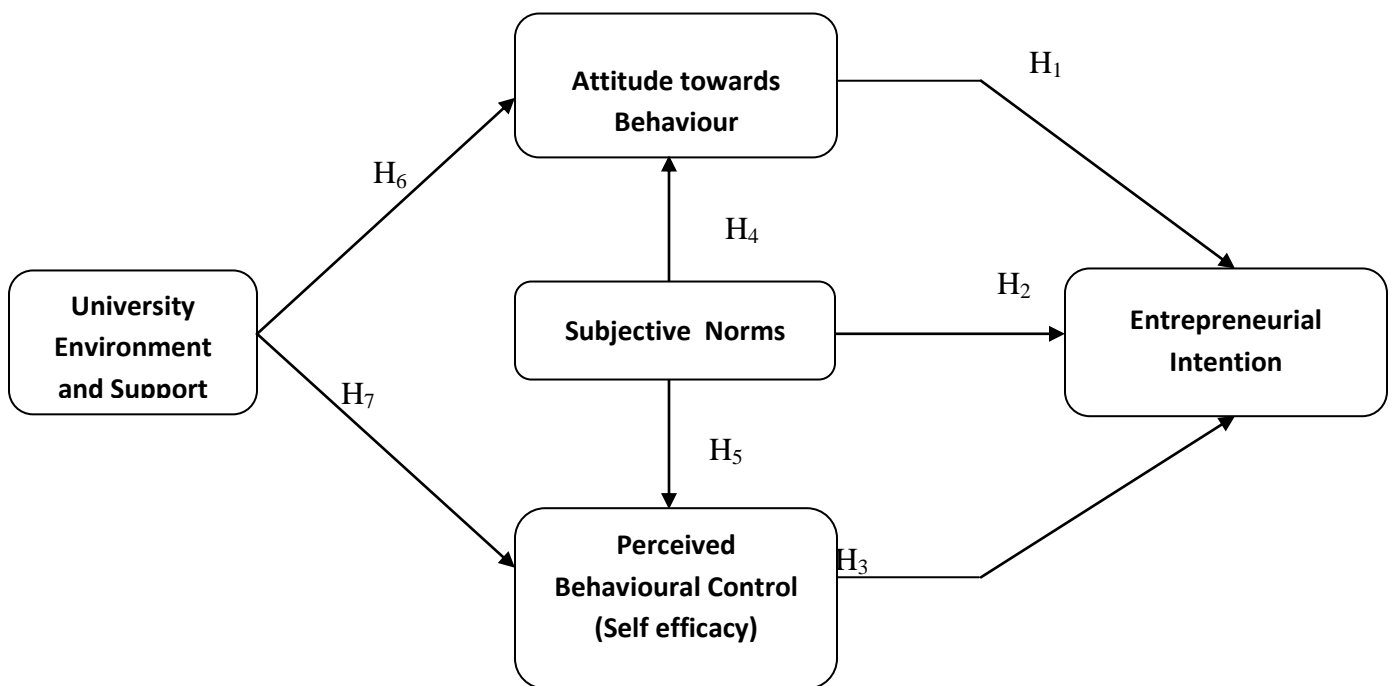
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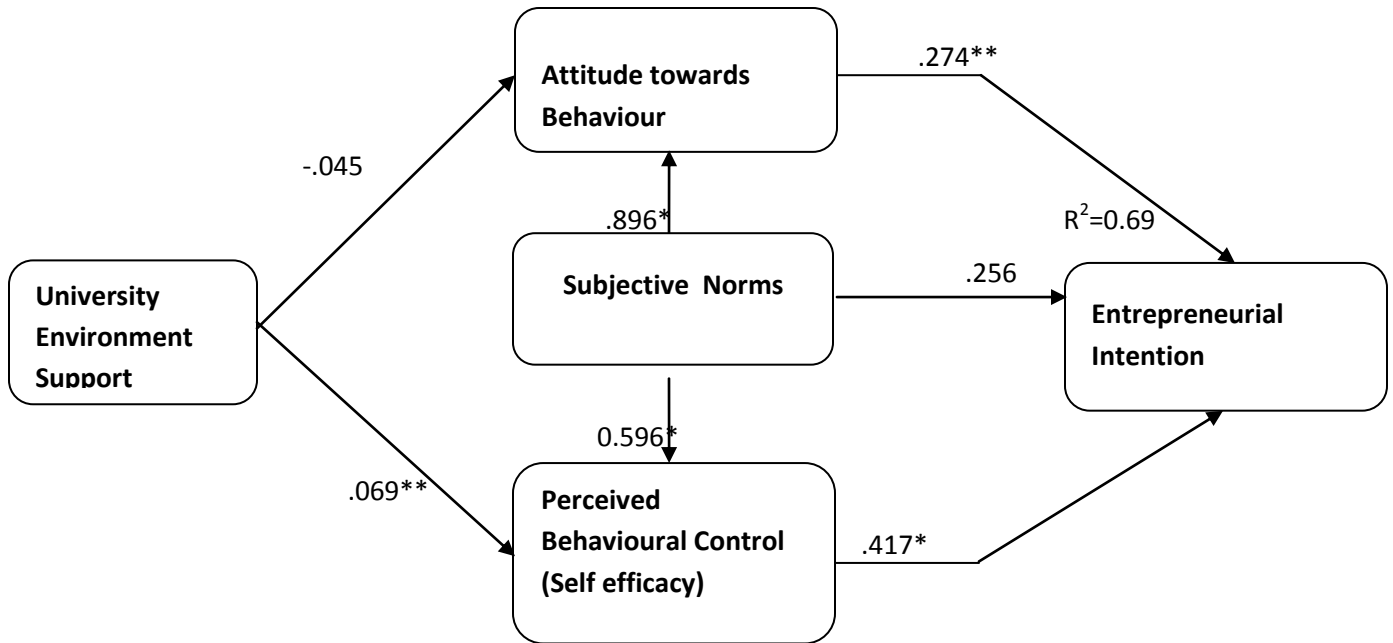
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## Figures

**Figure I**  
**Entrepreneurial Intention-University Support Model**



**Figure II**  
**Entrepreneurial Intention-University support Model**



**Note: \*\* p < 0.05 level and \* p < 0.001 level**

## Tables

**Table I**

**Entrepreneurial Intention: Sample Size**

<b>Country Name</b>	<b>Sample size</b>
India	526
Singapore	252
Malaysia	319
Total	1097

**Table II**  
**Entrepreneurial Intention:**  
**Variables Measurement and Reliability Analysis**

Variable	Measurement	Country	Cronbach's Alpha
Entrepreneurial intention	1. I am ready to do anything to be an entrepreneur	<b>Total</b>	<b>.929</b>
	2. My professional goal is to be an entrepreneur	India	.911
	3. I will make every effort to start and run my own enterprise	Singapore	.931
	4. I am determined to create a firm in the future		
	5. I have very seriously thought of starting a firm	Malaysia	.956
Attitude towards entrepreneurship	6. I have got the firm intention to start a company some day		
	1. Being an entrepreneur implies more advantages than disadvantages to me	<b>Total</b>	<b>.871</b>
	2. A career as an entrepreneur is attractive for me	India	.831
	3. If I had the opportunity and resources, I'd like to start a firm	Singapore	.868
	4. Being an entrepreneur would entail great satisfactions for me	Malaysia	.920
Subjective norms	5. Among various career options, I'd rather be an entrepreneur		
	If you decide to start a new firm, please indicate whether following people in your social environment would agree to that decision or not.	<b>Total</b>	<b>.814</b>
		India	.739
	1. Your Parents	Singapore	.856
	2. Your Siblings		
	3. Your Friends	Malaysia	.857
	4. Your Colleagues and Mates		
	5. Your Teacher and Lecturers		
	6. Your other near ones whose opinion you		

	consider important		
Perceived behavioural control	1. Start a firm and kept it working would be easy for me	<b>Total</b>	<b>.809</b>
	2. I am prepared to start a viable firm	India	.741
	3. I can control the creation process of a new firm	Singapore	.850
	4. I know the necessary practical details to start a firm		
	5. I know how to develop an entrepreneurial project		
	6. If I tried to start a firm, I would have a high probability of succeeding	Malaysia	.870

**Table III**

**Reliability Analysis for University Environment and Support**

Variable		Cronbach's Alpha
University Environment and Support	<b>Overall</b>	<b>.950</b>
	India	.945
	Singapore	.941
	Malaysia	.955



**Table IV**  
**Factor and Corresponding Items with Factor Loading for University Environment and Support**

<b>Factors</b>	<b>No.</b>	<b>Items (My university does...)</b>	<b>Factor Loadings</b>
Targeted Cognitive and Non-cognitive support	13	helps students to build required network for starting a firm	.277
	17	has well-functioning infrastructure to support the new start-up firms	.259
	16	arranges for mentoring and advisory services for would-be entrepreneurs	.304
	14	uses its reputation to support students that start a new business	.282
	18	provides creative atmosphere to develop ideas for new business start-ups	.306
	10	provides students with ideas to start a new business firm	.309
	12	provides students with the financial means needed to start a new business	.241
	9	motivates students to start a new business	.319
	11	provides students with the knowledge needed to start a new business	.326
	15	arranges lectures of successful entrepreneurs for experience-sharing	.324
	8	creates awareness of entrepreneurship as a possible career choice	.440
	7	brings entrepreneurial students in contact with each other	.526
General Educational Support	2	offers project work focused on entrepreneurship	.819
	3	offers traineeship study in entrepreneurship	.805
	1	offers elective courses on entrepreneurship	.777
	4	offers a bachelor or master study in entrepreneurship	.766
	5	arranges conferences and workshops on entrepreneurship	.657
	6	organizes business plan competitions and case	.607

		teaching for entrepreneurship	
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**Table V**

**Factors, Reliability Analysis, Eigenvalues, Percentage of Variance and**

Cumulative Percentage of Variance for University Environment and Support

<b>Factors</b>	<b>Reliability (Cronbach's Alpha)</b>	<b>Eigenvalue</b>	<b>% of Variance</b>	<b>Cumulative % Variance</b>
Targeted cognitive and non-cognitive support	.943	9.801	54.449	54.449
General educational support	.887	1.537	8.540	62.989

**Table VI**

**Goodness-of-fit Indices for the Structural Equation Model for the Study**

	$\chi^2$	df	RMSEA	RMSEA HI 90	NFI	CFI	TLI
Hypothesized model	3608.138	742	.059	.061	.872	.895	.884

**Table VII**

**Regression Weights for Entrepreneurial Intention-Constraint Model**

<b>Hyp.</b>	<b>Relationship</b>	<b>Estimate</b>	<b>S.E.</b>	<b>C.R.</b>	<b>P</b>	<b>Supported</b>
Ha <sub>1</sub>	EI <--- ATB	.397	.266	1.493	.013	YES
Ha <sub>2</sub>	EI <--- SN	.611	.526	1.162	.245	NO
Ha <sub>3</sub>	EI <--- PBC	.635	.076	8.409	***	YES
Ha <sub>4</sub>	ATB <--- SN	1.474	.168	8.778	***	YES
Ha <sub>5</sub>	PBC <--- SN	.932	.101	9.243	***	YES
Ha <sub>6</sub>	ATB <--- UES	-.030	.019	-1.543	.123	NO
Ha <sub>7</sub>	PBC <--- UES	.043	.020	2.189	.029	YES

**Table VIII**  
**MANOVA and ANOVA Results for University Environment and Support – General**  
**Educational Support**

<b>Source</b>		<b>Multivariate Test Values</b>	<b>F-value</b>	<b>Sign.</b>
<b>Multivariate Tests</b>				
Pillai's Trace		0.244	24.539	0.000
Wilks' Lambda		0.760	25.939	0.000
Hotelling's Trace		0.310	27.347	0.000
Roy's Largest Root		0.292	51.549	0.000
<b>ANOVA Tests</b>				
Statement 1		--	138.740	0.000
Statement 2		--	46.031	0.000
Statement 3		--	38.351	0.000
Statement 4		--	63.332	0.000
Statement 5		--	25.378	0.000
Statement 6		--	6.773	0.001
<b>Group Means</b>	<b>Statement 1</b>	<b>Statement 2</b>	<b>Statement 3</b>	
India	2.76	3.09	2.94	
Singapore	3.56	3.45	3.21	
Malaysia	4.00	3.81	3.64	
<b>Group Means</b>	<b>Statement 4</b>	<b>Statement 5</b>	<b>Statement 6</b>	
India	2.84	3.28	3.57	
Singapore	3.30	3.34	3.45	
Malaysia	3.72	3.79	3.76	

**Table IX**  
**MANOVA and ANVOA results for university environment and support – targeted**  
**cognitive and non-cognitive support**

Source		Multivariate Test Values	F-value	Sign.
<b>Multivariate Tests</b>				
Pillai's Trace		0.113	5.151	0.000
Wilks' Lambda		0.889	5.201	0.000
Hotelling's Trace		0.122	5.251	0.000
Roy's Largest Root		0.098	8.443	0.000
<b>ANOVA Tests</b>				
Statement 7		--	18.836	0.000
Statement 8		--	13.548	0.000
Statement 9		--	12.179	0.000
Statement 10		--	18.010	0.000
Statement 11		--	16.052	0.000
Statement 12		--	21.556	0.000
Statement 13		--	26.709	0.000
Statement 14		--	23.287	0.000
Statement 15		--	6.091	0.002
Statement 16		--	14.884	0.000
Statement 17		--	32.013	0.000
Statement 18		--	7.725	0.000
<b>Group Means</b>	<b>Statement 7</b>	<b>Statement 8</b>	<b>Statement 9</b>	<b>Statement 10</b>
India	3.09	3.31	3.29	3.16
Singapore	3.26	3.51	3.43	3.39
Malaysia	3.56	3.69	3.65	3.62
<b>Group Means</b>	<b>Statement 11</b>	<b>Statement 12</b>	<b>Statement 13</b>	<b>Statement 14</b>
India	3.37	2.77	2.90	2.84
Singapore	3.63	3.10	3.39	3.11
Malaysia	3.78	3.30	3.41	3.36
<b>Group Means</b>	<b>Statement 15</b>	<b>Statement 16</b>	<b>Statement 17</b>	<b>Statement 18</b>
India	3.34	2.98	2.76	3.12
Singapore	3.41	3.26	3.15	3.30
Malaysia	3.62	3.37	3.36	3.42

